

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 March 2005 (31.03.2005)

PCT

(10) International Publication Number
WO 2005/029088 A3

- (51) International Patent Classification⁷: **G01N 33/68**
- (21) International Application Number:
PCT/GB2004/050012
- (22) International Filing Date:
20 September 2004 (20.09.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0322063.9 20 September 2003 (20.09.2003) GB
0414089.3 23 June 2004 (23.06.2004) GB
0419068.2 27 August 2004 (27.08.2004) GB
- (71) Applicants (for all designated States except US): **UNIVERSITE DE GENEVE**; Rue General-Dufour 24, Case Postale, CH-1211 Geneva 4 (CH). **LUCAS, Brian** [GB/GB]; Lucas & Co., 135 Westhall Road, Warlingham, Surrey CR6 9HJ (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HOCHSTRASSER, Denis, Francois** [CH/CH]; Chemin de la Savonniere 27, Collonge-Bellerive, CH-1245 Geneva (CH). **SANCHEZ, Jean-Charles** [CH/CH]; Chemin Frank-Thomas 42, CH-1208 Geneva (CH). **LESCUYER, Pierre** [FR/FR]; 2, rue du Chablais, F-74100 Annemasse (FR). **ALLARD, Laure** [FR/FR]; Residence Le Clos des Vignes, 44 A Rue des Vignes, F-74240 GAILLARD (FR).
- (74) Agent: **LUCAS, Brian**; Lucas & Co., 135 Westhall Road, Warlingham Surrey CR6 9HJ (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:
15 September 2005
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 2005/029088 A3

(54) Title: **DIAGNOSTIC METHOD FOR BRAIN DAMAGE-RELATED DISORDERS**

(57) Abstract: A brain damage-related disorder is diagnosed in a subject by detecting at least one polypeptide, or a variant or mutant thereof selected from A-FABP, E-FABP, PGP 9.5, GFAP, Prostaglandin D synthase, Neuromodulin, Neurofilament L, Calcyphosine, RNA binding regulatory subunit, Ubiquitin fusion degradation protein 1 homolog, Nucleoside diphosphate Idnase A, Glutathione S tranférase P, Cathepsin D, DJ-1 protein, Peroxiredoxin 5 and Peptidyl-prolyl cis-trans isomerase A (Cyclophilin A) in a sample of body fluid taken from the subject.

INTERNATIONAL SEARCH REPORT

PCT/GB2004/050012

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, Sequence Search, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/42793 A (HOCHSTRASSER D.F. ET AL.) 14 June 2001 (2001-06-14) cited in the application the whole document -----	1-9, 16-22, 37-42,57
X	WO 01/67108 A (HOCHSTRASSER D.F. ET AL.) 13 September 2001 (2001-09-13) the whole document -----	1-9, 16-22, 37-42,57
X	WO 03/069346 A (HOCHSTRASSER D.F. ET AL.) 21 August 2003 (2003-08-21) the whole document -----	1-9, 16-22, 37-42,57
	----- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

7 March 2005

Date of mailing of the international search report

13.07.2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Giry, M

INTERNATIONAL SEARCH REPORT

PCT/GB2004/050012

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GUILLAUME E. ET AL.: "A potential cerebrospinal fluid and plasmatic marker for the diagnosis of Creutzfeldt-Jakob disease." PROTEOMICS, vol. 3, August 2003 (2003-08), pages 1495-1499, XP002320144 the whole document -----	1-9, 16-22, 37-42,57
A	CARRETTE O. ET AL.: "A panel of cerebrospinalfluid potential biomarkers for the diagnosis of Alzheimer's disease." PROTEOMICS, vol. 3, August 2003 (2003-08), pages 1486-1494, XP008022060 the whole document -----	1-9, 16-22, 37-42,57
P,X	LESCUYER P. ET AL.: "Identification of post-mortem cerebrospinal fluid proteins as potential biomarkers of ischemia and neurodegeneration." PROTEOMICS, vol. 4, August 2004 (2004-08), pages 2234-2241, XP008039498 the whole document -----	1-9, 16-22, 37-42,57

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB2004/050012

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material



a sequence listing



table(s) related to the sequence listing

b. format of material



in written format



in computer readable form

c. time of filing/furnishing



contained in the international application as filed



filed together with the international application in computer readable form



furnished subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

PCT/GB2004/050012

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 16-35
because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 16-35 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-9, 16-20, 37-40, 57 (partially), 21, 22, 41, 42 (completely)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9,16-20, 37-40, 57 (partially), 21,22,41,42 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of a FABP protein as a marker.

2. claims: 1-9,16-20,37-40,57 (partially), 23,43 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of PGP 9.5 as a marker.

3. claims: 1-9,16-20,37-40,57 (partially), 24,44 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of GFAP as a marker.

4. claims: 1-9,16-20,37-40,57 (partially), 25,45 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of prostaglandin D synthase as a marker.

5. claims: 1-9,16-20,37-40,57 (partially), 26,46 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of neuromodulin as a marker.

6. claims: 1-9,16-20,37-40,57 (partially), 27,47 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of neurofilament L as a marker.

7. claims: 1-9,16-20,37-40,57 (partially), 28,48 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of calcyphosine as a marker.

8. claims: 1-9,13-20,37-40,57 (partially), 11,29,49 (completely)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of RNA binding regulatory subunit as a marker.

9. claims: 1-9,13-20,37-40,57 (partially), 10,30,50 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of ubiquitin fusion degradation protein 1 homolog as a marker.

10. claims: claims 1-9,13-20,37-40,57 (partially), 12,31,51 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of nucleoside diphosphate kinase A as a marker.

11. claims: 1-9,16-20,37-40,57 (partially), 32,52 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of glutathione S transferase P as a marker.

12. claims: 1-9,16-20,37-40,57 (partially), 33,53 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of cathepsin D as a marker.

13. claims: 1-9,16-20,37-40,57 (partially), 34,54 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of DJ-1 as a marker.

14. claims: 1-9,16-20,37-40,57 (partially), 35,55 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of peroxiredoxin 5 as a marker.

15. claims: 1-9,16-20,37-40,57 (partially), 36,56 (completely)

Method of diagnosis of a brain damage-related disorder and assay device therefor based on the detection of cyclophilin A as a marker.

INTERNATIONAL SEARCH REPORT

Information on patent family members

PCT/GB2004/050012

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0142793	A	14-06-2001	AU 773595 B2	27-05-2004
			AU 1707201 A	18-06-2001
			CA 2393127 A1	14-06-2001
			WO 0142793 A2	14-06-2001
			EP 1238284 A2	11-09-2002
			JP 2003516541 T	13-05-2003
			US 2003100038 A1	29-05-2003

WO 0167108	A	13-09-2001	GB 2360089 A	12-09-2001
			AU 5828201 A	17-09-2001
			CA 2402314 A1	13-09-2001
			WO 0167108 A2	13-09-2001
			EP 1261875 A2	04-12-2002
			JP 2003526788 T	09-09-2003
			US 2003157580 A1	21-08-2003

WO 03069346	A	21-08-2003	AU 2003210267 A1	04-09-2003
			CA 2474670 A1	21-08-2003
			WO 03069346 A2	21-08-2003
			EP 1476759 A2	17-11-2004
